

HONEYWELL

APPLICATION SUMMARY

NEW DIMENSIONS OF PROVEN COMPUTER PERFORMANCE WITH EXCEPTIONAL ABILITY TO MATCH THE EXACT DIMENSIONS OF YOUR BUSINESS

SERIES 200



SPECIALIZED TECHNIQUE FOR EFFICIENT TYPESETTING

AUTOMATIC COPY ENTRY
EDITING AND REFORMATTING
LAYOUT CONTROLS
AUTOMATIC JUSTIFICATION
LOGICAL HYPHENATION
DICTIONARY HYPHENATION
AUTOMATIC TYPESETTING
ALL-COPY CAPABILITY
INFORMATION RETRIEVAL

HONEYWELL SYSTEMS MEET TYPESETTING REQUIREMENTS

THE APPLICATION

STET (Specialized Technique for Efficient Typesetting) is a system developed by Honeywell to aid newspapers, magazines, and general publishing companies to set type rapidly, accurately, and economically.

For the newspaper and magazine industry it offers throughput rates in excess of 20,000 thirty-pica lines per hour, combined with great ease in setting all types of copy — including tabular material. For general publishing companies, flexible editing facilities permit corrections, new additions, abstracts, and other similar materials to be set with a minimum of keyboarding once the original copy has been punched into paper tape.

To all users, Honeywell STET offers full typesetting facilities and a choice of hyphenation techniques based either entirely on logical rules, or on dictionary look-up with logical rules for backup.

The STET system consists of general-purpose, modular routines which can be tailored to fit a particular user's needs. Thus, the routines cover a wide range of configurations and an equally wide range of requirements. As a configuration is expanded, additional STET modules can be added and combined to give the user the advantages of a total system without major reprogramming effort.

COMPUTER ORIENTATION

Honeywell computer systems are particularly well suited to set type automatically. Justification and hyphenation routines require a great deal of processing and, if a dictionary is used for hyphenation, fast random access storage. In order to meet critical deadlines, rapid over-all processing is an essential requirement for any newspaper system. Honeywell systems meet these needs with: high internal speeds; a drum providing large, rapid-access storage capacity for data and font tables; and the capability of simultaneously carrying out data input, drum accesses, data output, and computing operations to give exceedingly fast throughput rates. With this power, Honeywell systems can perform first-quality hyphenation and line justification and still have time to spare for accounting, statistical, and other auxiliary publishing operations.

Special hardware devices which connect as many as 10 paper tape readers and 7 punches to the computer are available. By making it possible to loop tape directly from reperforators to the readers, and from punches to the linecasters, these devices eliminate a wearisome and inefficient feature of some newspaper systems — the necessity of manually carrying strips of paper tape to and from the computer.

HARDWARE AND SOFTWARE DIMENSIONS

Hardware and software components for use in Honeywell systems are summarized below. This total capability assures precise tailoring to current and future application requirements.

- Models 120/200/1200/2200/4200
- Memory speeds ranging from 3 microseconds to 188 nanoseconds per character
- Memory capacities ranging from 2,048 to 524,288 characters
- Up to 30 index registers; flexible nanosecond control memory
- A universal set of powerful instructions
- Advanced programming and memory addressing methods, plus editing, multiply/divide, and floating-point operations
- Up to 16 peripheral operations performed simultaneously with computing
- Up to 64 peripheral control units connected to a processor; each accommodates one or several peripheral devices
- A wide variety of peripheral equipment available in a range of performance capabilities, including communication devices, card equipment, magnetic tape and paper tape units, mass storage units, high-speed printers, MICR equipment, and memory-to-memory adapter units
- Large and powerful real time capability that includes an efficient interrupt facility, single- and multi-channel communication controls, (the latter accepting data from up to 63 lines simultaneously), 8-level code handling, and a range of remote terminal facilities
- Easy-to-use, compatible programming languages; powerful assembly and compiler systems
- Wide array of generalized data manipulation programs: sorts, I/O packages, report generators, and others
- Instruction and data compatibility with 1401, 1410, 1440, 1460, and 7010 systems
- Liberator software for fast and easy program conversion

THE STET SYSTEM

STET (Specialized Technique for Efficient Typesetting) is a package of precoded subroutines and systems charts covering justification and hyphenation of copy. Exceptional flexibility in editing and control of format is provided. Productivity is increased over manual methods of typesetting by eliminating the decision time for hyphenation, the rub-out time for loose and tight lines, and the extra keystrokes for typesetting codes. Straight copy, tabular copy (such as stock exchange tables), and advertising matter may be set in the simplest manner, resulting in faster copy preparation.

EDITING

Flexible editing facilities in the computer program permit the original keyboarding of copy without regard for the eventual format or medium for publication. Once the copy has been punched into paper tape, it can be edited and justified easily and quickly into any required column width and for any specified type font, merely by specifying the format required. Thus, copy for a scientific journal can be punched into paper tape and the tape read and justified for publication of the journal. If, later, there is a request for a reprint of an article, in either the original or in an edited form, the computer can quickly punch a rejustified tape suitable for printing by any of several techniques. Also, if copy initially comes in the form of paper tape from a news service over a press wire, it can be edited, words and sentences cut or inserted, and the whole rejustified very rapidly with only the need to perforate the changes.

INDEXING

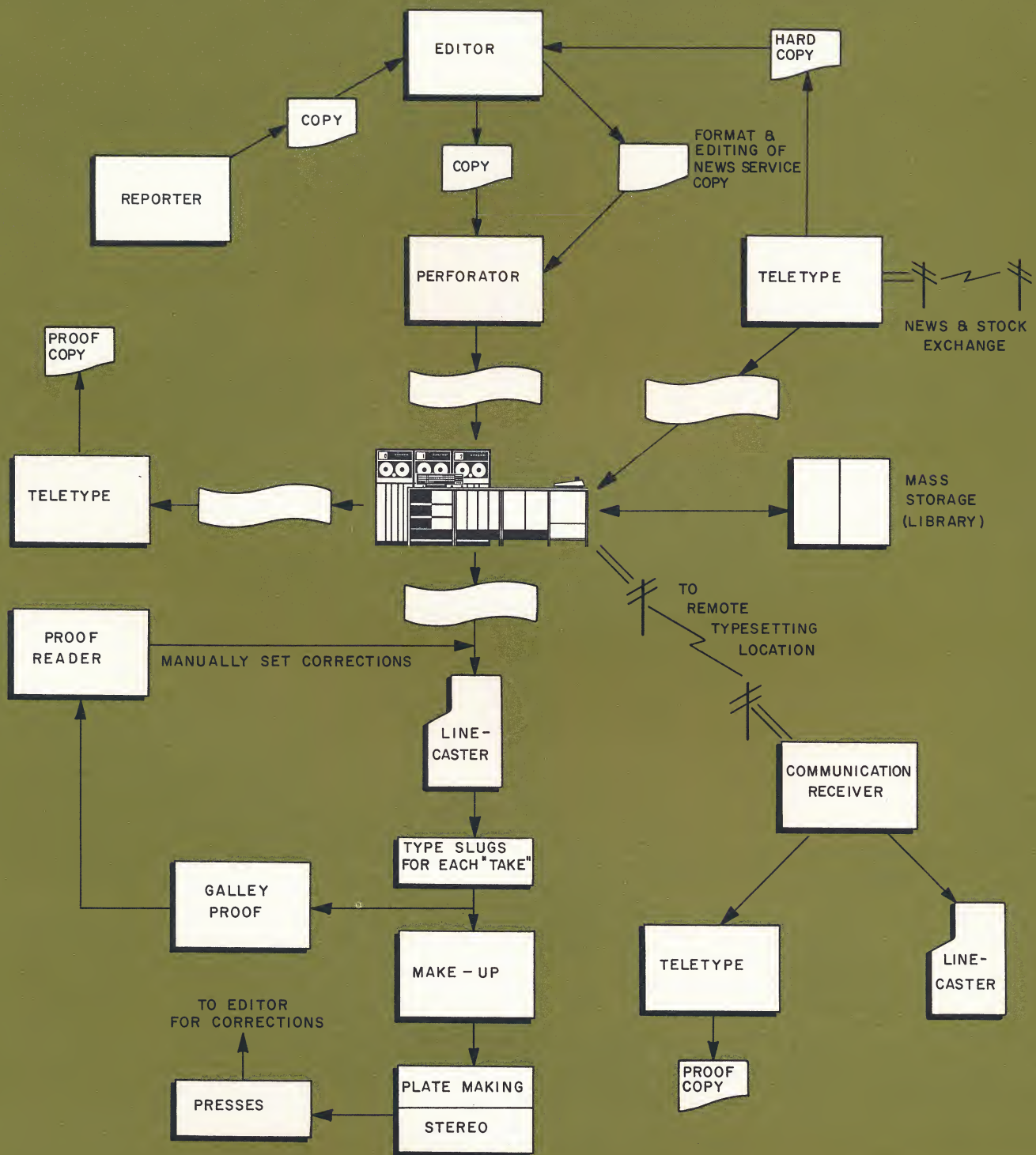
The storing of copy in electronic form permits rapid and automatic indexing for information retrieval purposes. One application of this facility is in issuing a periodical's annual index of the titles, authors, and subject matter of articles which have appeared throughout the year. While this involves considerable labor in a manual system, a computer can quickly search magnetic tape or random access records, extract information, sort it into the desired sequence and produce a justified and hyphenated index. This same method can be used in news writing to immediately provide background and historical data on a subject, rather than digging in the morgue.

CLASSIFIED ADS

The setting of the classified-advertisement pages of a newspaper is another valuable application demonstrating the computer's ability to store and retrieve large amounts of information and to sort it into required sequences (e.g., for classified ads, alphabetic within subject). The setting of advertisements can be tied in with automatic billing of advertising accounts. The computer can also accumulate copy for a particular font until enough is available to make it worthwhile to set up a linecaster with that font and then punch out the justified copy. Operating statistics can be accumulated during the setting of copy.

TOTAL SYSTEM

The use of a general-purpose computer in a publishing firm is most beneficial when it is tied into a comprehensive system involving not only such areas as typesetting, and advertising and account billing, but also circulation statistics, payroll, accounts payable, and management reporting.



COPY PREPARATION AND TYPESETTING

OPERATION OF THE HONEYWELL TYPESETTING SYSTEM

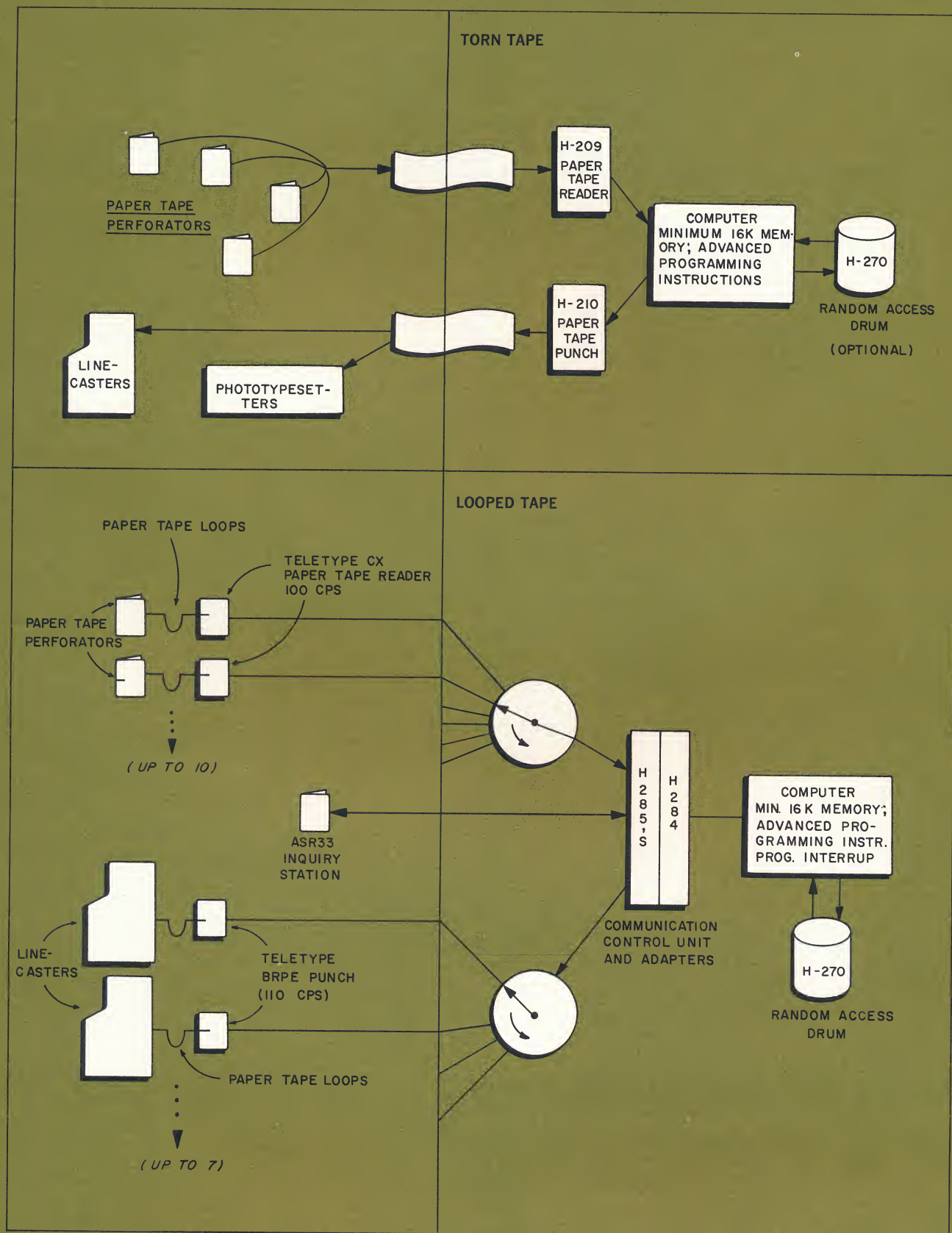
INPUT

The initial step of typing a story or article remains unaffected by the computer system except that it is possible to avoid a separate operation for punching the copy into paper tape. Consolidation of writing and media conversion can be effected by using a typewriter which produces punched paper tape as a by-product. Only editing directions and corrections to amend the original copy need to be perforated in a separate operation. The only format control which needs to be introduced at this stage consists of codes such as "begin paragraph," "upper/lower case," "upper/lower rail," and possibly tabbing indicators for tabular matter.

COMPUTER PROCESSING

The computer program, having selected the correct font tables for this section of the run, proceeds with the justifying and, where necessary, hyphenating of the copy. The justified copy can be produced directly as punched paper tape or placed in computer storage for further processing before printing. If a pre-typesetting proof is required, the paper tape produced may be run through an auxiliary printer; otherwise, the tape goes directly into the linecaster. Normally, a "take", or section of a complete article, will be punched and the paper tape torn off and delivered to a linecaster. The separate "takes" constituting an article are assembled in the composing room after casting — possibly on several linecasters — and sent to the presses.

Where there is a greater volume of copy to be set and tight deadlines to be met, the use of special hardware makes it possible to bypass the manual operations of taking tape to and from the computer, and instead to use paper tape looped directly from the tape perforators to readers connected to the computer. Similarly on output, several punches may be used and the tape looped from each punch to a linecaster. A computer program then takes over the task of scheduling copy to the appropriate linecasters.



ENVIRONMENT CONFIGURATIONS

STET JUSTIFICATION TECHNIQUES

Initial input to STET may be handled in a variety of ways. After input, the computer processes the copy character by character. Functional codes such as "paragraph indent," "quad," etc., are analyzed when encountered. Letters and numbers are stored in core memory and a table of type dimensions for the particular type font being used is referenced to calculate the space occupied by each character. At each end-of-word, signified by an input word-space code, the space thus far taken by the line is compared to the column width. If the line is over-justified (i.e., overhangs the column), the last word is taken off. The program then examines the number of spaces in the line to determine if these can be expanded up to a given maximum to justify the line. If so, the routine outputs the line with suitable function codes and terminates it with an "elevate" code. The amount of word space expansion permitted is a parameter of the system which can be varied by a user to secure any desired combination of good appearance and economy of paper usage.

If the line cannot be justified by acceptable spacing, the hyphenation routine is entered. This routine attempts to split the overhanging word at a reasonable point. If this cannot be done, then a combination of spacing and hyphenation is tried. If success is not achieved, the program resorts to letter spacing, starting with the longest word.

STET HYPHENATION TECHNIQUES

LOGICAL HYPHENATION

Two different approaches to hyphenation are available in STET. For a small computer configuration, a set of rules has been devised and tested which analyzes the word to be hyphenated by vowel and consonant patterns to arrive at the most likely hyphenation points. Before entering the full hyphenation logic, the program first tests to see if the word has any common suffixes and prefixes. If so, the suffix or prefix is split off and possible hyphenation points indicated. In general, the logic examines the sequence of vowels and consonants in the word, looking for key three-letter sequences in order to determine the syllables. In some circumstances it may go to four-letter combinations.

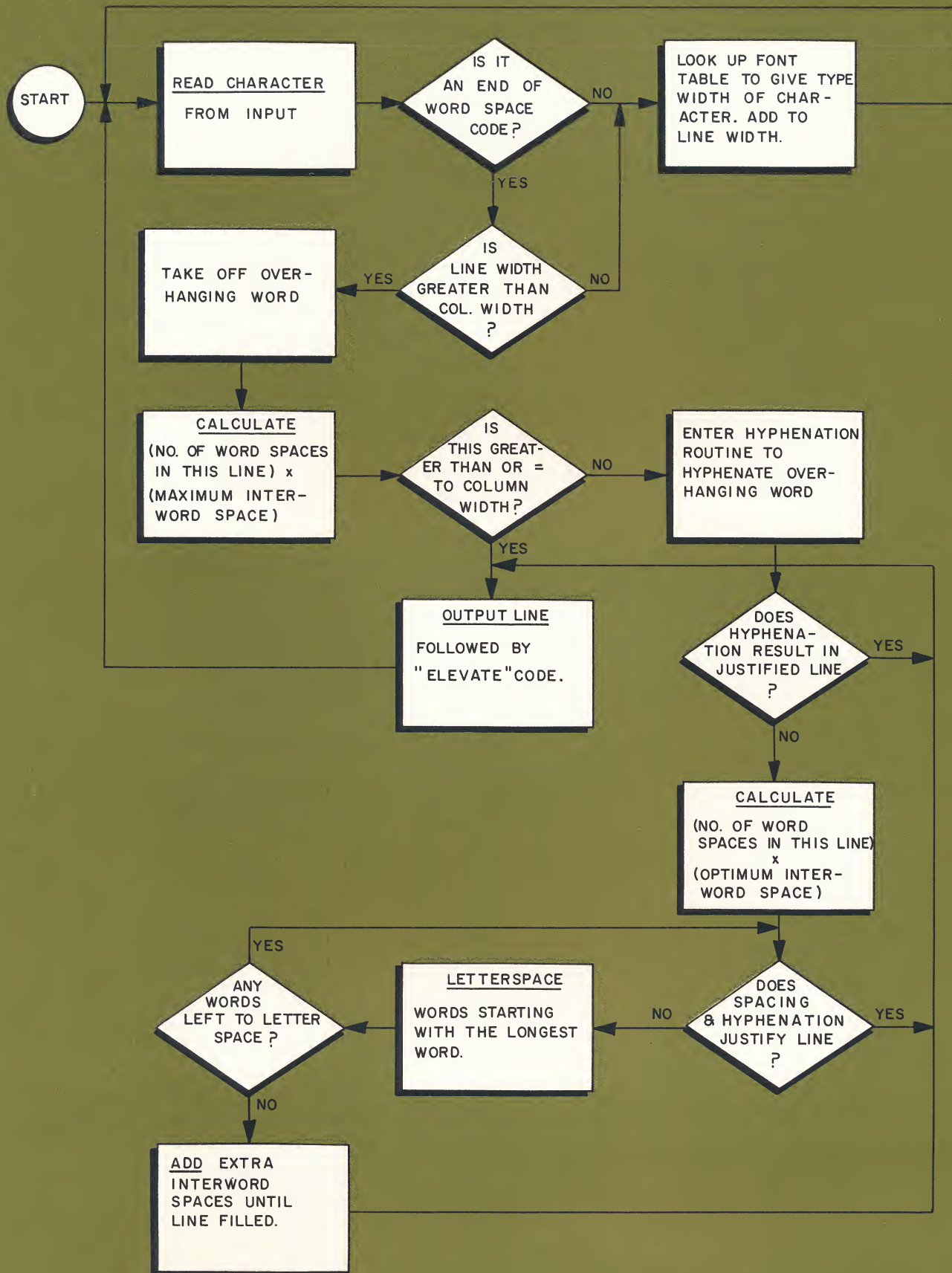
Having determined all possible hyphenation points, the program grades each one as acceptable or less acceptable before returning to the justification routine.

DICTIONARY LOOK-UP

If enough core memory is available, the logic may be supplemented by a small dictionary of approximately 100 words. This dictionary contains the correct hyphenation of local names or special words which are used in a particular application and which have configurations preventing the hyphenation logic from handling them acceptably.

When extremely high accuracy is required, a larger dictionary, containing up to 50,000 words, may be used in configuration having drum random access storage. A set of logical hyphenation rules is also included to deal with words still not contained in the dictionary. Advanced programming techniques are employed to facilitate efficient and rapid searching of the dictionary. In this respect, the very short access time of the drum (27 milliseconds) results in a very rapid look-up process.

Full updating facilities are incorporated in the dictionary system so that a user may slant the contents of the dictionary to his own requirements. To render this process easier, provision is made in STET for accepting as normal input words containing indications of desired hyphenation points. When the program reaches a word so marked, it inserts the word into the dictionary. Any later uses of this word will call forth the same hyphenation points. Thus, the program, in a sense, "learns" the vocabulary of a particular user.



OVER-ALL LOGIC OF JUSTIFICATION/HYPHENATION PROCESS

LAYOUT CONTROLS

The STET system incorporates several layout directives which make it easy to specify complicated layouts, thus saving time for the perforator operators. For example, flush left, flush right, centered, or proportionally spaced heading lines can be set by straightforward use of a code character. Tab points can be preset simply and accurately with a minimum of effort. Facilities for producing hanging paragraphs and run-arounds are also provided.

The main layout controls provided in STET are the following:

Select Type Font: Indicates to the computer the particular font to be used for the following copy. In larger configurations, this control causes the reading of a table describing the font into an immediate access area.

Set Column Width: Sets up the column width, in picas, to be used in the justification program.

Set Quadding Spaces: Used to set up column titles, paragraph names, and other similar headings. Causes the computer to lay out the information between the quadding codes in one of the formats: flush left, flush right, centered, or proportionally spaced.

Set Paragraph Indentation: Used to reset the paragraph indentation space (which is also used for hanging paragraphs) if the parameter set in the program is to be varied.

Set Tabbing Points: Sets tab indicators in the program when tabular information is to be laid out. Tabbing points can be set for left- or right-justified columns. The leaders may be either random or aligned on a grid.

Set Label: Causes the punching of an operator-readable label in the paper tape. These labels are ignored by the linecaster.

Change to Upper/Lower Rail: Causes following copy to be set in the alternative (e.g., boldface or italics) or regular type.

Set Fixed Spaces: Allows for spaces to be used which will not be altered by the justification process.

Run-around: Permits the column width to be altered temporarily for a given number of lines, and allows the copy to be set flush left or flush right.

Change to Upper/Lower Case: Causes upper/lower case characters to be set.

Take Indents: A variety of indentations can be specified; for example: hanging paragraphs; indent one paragraph on left, on right, or both; indent a number of lines; etc.

Establish Operator Identity: Enables the program to accumulate statistics of perforator operator performance.

EDITING FACILITIES

Once justified or unjustified copy has been transferred to paper tape, facilities exist for editing the copy to produce a new version. Directives are also available for correcting errors discovered either during or after perforating. For instance, specific characters, words, sentences, or paragraphs may be erased and new ones inserted.

ELECTRONIC PRINTING TECHNIQUES

In the preceding description of the STET system, a conventional printing process has been assumed throughout. However, one of the current developments in the printing industry involves the use of photocomposition machines. These machines rely mainly on computer control and can set an entire page very rapidly on a photographic plate which is then used to produce a printing plate.

The techniques discussed in this brochure are applicable to electronic printing processes as well as to conventional methods. Such differences as occur in, for instance, spacing procedures can be readily incorporated in controlling programs.

SUMMARY

A Honeywell system with STET offers the user competitive advantages through efficient and rapid typesetting, the potential for consolidation of separate functions into an over-all system, and flexibility in editing and in system design. STET is not a fixed "package"; it is modular and variable to meet the individual requirements and desires of the customer.

Honeywell

ELECTRONIC DATA PROCESSING

SALES OFFICES AND DATA CENTERS
IN PRINCIPAL CITIES OF THE WORLD